In The Claims:

1. (Original) A system for performing an image rendering procedure, comprising:

a rendering manager configured to divide an original luminance image into a plurality of original subband images which are then converted into original perceived contrast images, said rendering manager performing a compression procedure upon said original perceived contrast images to produce compressed perceived contrast images, said rendering manager then converting said compressed perceived contrast images into compressed subband images that are combined together during a subband combination procedure to generate a rendered luminance image; and

a processor coupled to said system for controlling said rendering manager.

2. (Original) The system of claim 1 wherein said rendering manager performs said image rendering procedure on original composite image data captured by a digital still camera, said rendering manager being implemented as at least one of software program instructions and electronic hardware circuitry.

3. (Original) The system of claim 2 wherein said rendering manager separates said original composite image data into said original luminance image and chrominance information.

4. (Original) The system of claim 3 wherein said rendering manager divides said original luminance image into said original subband images by utilizing a least one of a third-order spline wavelet filter bank and a software filtering program.

5. (Original) The system of claim 4 wherein said rendering manager converts said original subband images into original contrast images, except for a lowest-frequency subband image which is not converted into one of said original contrast images.

6. (Original) The system of claim 5 wherein said rendering manager converts said original subband images into said original contrast images by calculating individual pixel values M_p according to an equation 3.1:

$$M_p = \frac{L_p - L_A}{|L_A| + s} \tag{3.1}$$

where L_p is a luminance value at a location p in one of said original subband images, L_A is a luminance average around said location p, and s is a saturation term to avoid divisions by zero.

7. (Original) The system of claim 5 wherein said rendering manager calculates original contrast thresholds that correspond to respective ones of said original subband images.

8. (Currently Amended) The system of claim 7 wherein said rendering manager calculates said original contrast thresholds, m_t, based upon properties of human vision for individual pixels corresponding to said original subbands according to an equation 3.3:

$$m_t = \frac{k}{M_{opt}(u)} \sqrt{\frac{2}{T}\left(\frac{1}{X_O^2} + \frac{1}{X_{MAX}^2} + \frac{u^2}{N_{MAX}^2}\right)\left(\frac{1}{\eta p E} + \frac{\phi_0}{1 - e^{-\left(\frac{u}{u_0}\right)^2}}\right)} \qquad (3.3)$$

where u is a spatial frequency value for a pixel and surrounding pixels, X_0 is an object size for a captured scene expressed in angular degrees for a human eye, N_{max} is a maximum number of cycles that said human eye can integrate, X_{max} is a maximum object size that said human eye can integrate, [[n]] $\underline{\eta}$ is a quantum efficiency of cones in said human eye, p is a photon conversion factor for converting light units, E is a retinal illuminance value for said captured scene, ϕ_0 is a spectral density of neural noise, u_0 is a lateral inhibition frequency limit, k is a signal-to-noise ratio of said captured scene, $M_{opt}(u)$ is an optical modulation transfer function, and T is an integration time of said human eye.

9. (Original) The system of claim 8 wherein said rendering manager computes said retinal illuminance value E in accordance with an equation 3.4:

$$E = \frac{\pi d^2}{4} L_A \left[1 - \left(\frac{d}{9.7}\right)^2 + \left(\frac{d}{12.4}\right)^4\right] \qquad (3.4)$$

where *d* is a pupil diameter of said human eye, and L_A is a luminance average around a location *p* of said pixel.

10. (Original) The system of claim 9 wherein said rendering manage computes said pupil diameter d according to an equation 3.2:

$$d = 5 - 3\tanh(0.4\log_{10} L) \quad [\mathrm{mm}] \tag{3.2}$$

where L is a mean luminance of said captured scene.

11. (Original) The system of claim 8 wherein said rendering manager computes said optical modulation transfer function $M_{opt}(u)$ according to an equation 3.5:

$$M_{opt}(u) = e^{-2\pi^2\sigma^2u^2} \tag{3.5}$$

$$\sigma = \sqrt{\sigma_0^{\,2} + (c_{ab}d)^2}$$

where d is a pupil diameter of said human eye, u is said spatial frequency value, σ_0 is a point spread function basic width, and c_{ab} describes an increase of said point spread function basic width at an increasing pupil size.

12. (Original) The system of claim 8 wherein said rendering manager generates said original perceived contrast images that correspond to said original contrast images by utilizing said original contrast thresholds and said original contrast images.

13. (Original) The system of claim 12 wherein said rendering manager computes said original perceived contrast images by calculating individual pixel values C_p according to an equation 3.6:

$$C_p = \sqrt{\frac{M_p}{m_t}} \tag{3.6}$$

where M_p is an original pixel contrast value from said original contrast images, and m_t is a corresponding one of said original contrast thresholds.

14. (Original) The system of claim 1 wherein said rendering manager performs said compression procedure upon said original perceived contrast images to thereby keep small pixel amplitudes relatively constant, and to thereby reduce large pixel amplitudes.

15. (Currently Amended) The system of claim 1 wherein said rendering manager calculates display contrast thresholds, m_t, corresponding to an intended display device,
for individual pixels corresponding to said original subbands according to an equation 3.3:

$$m_t = \frac{k}{M_{opt}(u)}\sqrt{\frac{2}{T}\left(\frac{1}{X_O^2}+\frac{1}{X_{MAX}^2}+\frac{u^2}{N_{MAX}^2}\right)\left(\frac{1}{\eta pE}+\frac{\phi_0}{1-e^{-\left(\frac{u}{u_0}\right)^2}}\right)} \tag{3.3}$$

where u is a spatial frequency value for a pixel and surrounding pixels, X_0 is an object size for a displayed scene expressed in angular degrees for a human eye, N_{max} is a maximum number of cycles that said human eye can integrate, X_{max} is a maximum object size that said human eye can integrate, [[n]] $\underline{\eta}$ is a quantum efficiency of cones in said human eye, p is a photon conversion factor for

converting light units, E is a retinal illuminance value for said displayed scene, ϕ_0 is a spectral density of neural noise, u_0 is a lateral inhibition frequency limit, k is a signal-to-noise ratio of said displayed scene, $M_{opt}(u)$ is an optical modulation transfer function, and T is an integration time of said human eye.

16. (Original) The system of claim 15 wherein said rendering manager generates compressed contrast images, M_p, corresponding to said compressed perceived contrast images, C_p, by calculating individual pixel values according to a permutation of an equation 3.6:

$$C_p = \sqrt{\frac{M_p}{m_t}} \qquad \textbf{(3.6)}$$

where C_p is a pixel value from one of said compressed perceived contrast images, and m_t is a corresponding one of said display contrast thresholds.

17. (Original) The system of claim 16 wherein said rendering manager generates compressed subband images corresponding to said compressed contrast values, M_p, by calculating individual pixel values L_p according to a permutation of an equation 3.1:

$$M_p = \frac{L_p - L_A}{|L_A| + s} \qquad \textbf{(3.1)}$$

where M_p is a contrast value at a location p in one of said compressed contrast images, L_A is a luminance average around said location p, and s is a saturation term to avoid divisions by zero.

18. (Original) The system of claim 17 wherein said rendering manager linearly rescales a lowest-frequency subband image from said original subband images such that a mean luminance value from said lowest-frequency subband image is equal to a mean output luminance of said intended display device.

19. (Original) The system of claim 18 wherein said rendering manager performs said subband combination procedure by initially adding a next-to-lowest compressed subband image to said lowest-frequency subband image to produce a current combined subband image, said rendering manager then continuing said subband combination procedure by sequentially adding each remaining one of said compressed subband images to said current combined subband image in an order of ascending subband frequencies to finally produce said rendered luminance image.

20. (Original) The system of claim 19 wherein said rendering manager combines said rendered luminance image with corresponding chrominance information to produce composite rendered image data for use by a system user.

21. (Original) A method for performing an image rendering procedure, comprising the steps of:

dividing an original luminance image into a plurality of original subband images by utilizing a rendering manager;

converting said original subband images into original perceived contrast images with said rendering manager;

performing a compression procedure upon said original perceived contrast images to produce compressed perceived contrast images;

converting said compressed perceived contrast images into compressed subband images with said rendering manager; and

combining said compressed subband images together during a subband combination procedure to generate a rendered luminance image.

22. (Original) The method of claim 21 wherein said rendering manager performs said image rendering procedure on original composite image data captured by a digital still camera, said rendering manager being implemented as at least one of software program instructions and electronic hardware circuitry.

23. (Original) The method of claim 22 wherein said rendering manager separates said original composite image data into said original luminance image and chrominance information.

24. (Original) The method of claim 23 wherein said rendering manager divides said original luminance image into said original subband images by utilizing a least one of a third-order spline wavelet filter bank and a software filtering program.

25. (Original) The method of claim 24 wherein said rendering manager converts said original subband images into original contrast images, except for a lowest-frequency subband image which is not converted into one of said original contrast images.

26. (Original) The method of claim 25 wherein said rendering manager converts said original subband images into said original contrast images by calculating individual pixel values M_p according to an equation 3.1:

$$M_p = \frac{L_p - L_A}{|L_A| + s} \qquad \textbf{(3.1)}$$

where L_p is a luminance value at a location p in one of said original subband images, L_A is a luminance average around said location p, and s is a saturation term to avoid divisions by zero.

27. (Original) The method of claim 25 wherein said rendering manager calculates original contrast thresholds that correspond to respective ones of said original subband images.

28. (Currently Amended) The method of claim 27 wherein said rendering manager calculates said original contrast thresholds, m_t, based upon properties of human vision got individual pixels corresponding to said original subbands according to an equation 3.3:

$$m_t = \frac{k}{M_{opt}(u)}\sqrt{\frac{2}{T}\left(\frac{1}{X_O^2}+\frac{1}{X_{MAX}^2}+\frac{u^2}{N_{MAX}^2}\right)\left(\frac{1}{\eta pE}+\frac{\phi_0}{1-e^{-\left(\frac{u}{u_0}\right)^2}}\right)} \qquad (3.3)$$

where u is a spatial frequency value for a pixel and surrounding pixels, X_O is an object size for a captured scene expressed in angular degrees for a human eye, N_{max} is a maximum number of cycles that said human eye can integrate, X_{max} is a maximum object size that said human eye can integrate, [[n]] $\underline{\eta}$ is a quantum efficiency of cones in said human eye, p is a photon conversion factor for converting light units, E is a retinal illuminance value for said captured scene, ϕ_O is a spectral density of neural noise, u_O is a lateral inhibition frequency limit, k is a signal-to-noise ratio of said captured scene, $M_{opt}(u)$ is an optical modulation transfer function, and T is an integration time of said human eye.

29. (Original) The method of claim 28 wherein said rendering manager computes said retinal illuminance value E in accordance with an equation 3.4:

$$E = \frac{\pi d^2}{4} L_A \left[1 - \left(\frac{d}{9.7} \right)^2 + \left(\frac{d}{12.4} \right)^4 \right] \qquad (3.4)$$

where d is a pupil diameter of said human eye, and L_A is a luminance average around a location p of said pixel.

30. (Original) The method of claim 29 wherein said rendering manage computes said pupil diameter d according to an equation 3.2:

$$d = 5 - 3 \tanh(0.4 \log_{10} L) \quad [\mathrm{mm}] \qquad (3.2)$$

where L is a mean luminance of said captured scene.

31. (Original) The method of claim 28 wherein said rendering manager computes said optical modulation transfer function $M_{opt}(u)$ according to an equation 3.5:

$$M_{opt}(u) = e^{-2\pi^2 \sigma^2 u^2} \qquad (3.5)$$

$$\sigma = \sqrt{\sigma_0{}^2 + (c_{ab} d)^2}$$

where d is a pupil diameter of said human eye, u is said spatial frequency value, σ_0 is a point spread function basic width, and c_{ab} describes an increase of said point spread function basic width at an increasing pupil size.

32. (Original) The method of claim 28 wherein said rendering manager generates said original perceived contrast images that correspond to said original contrast images by utilizing said original contrast thresholds and said original contrast images.

33. (Original) The method of claim 32 wherein said rendering manager computes said original perceived contrast images by calculating individual pixel values C_p according to an equation 3.6:

$$C_p = \sqrt{\frac{M_p}{m_t}} \qquad (3.6)$$

where M_p is an original pixel contrast value from said original contrast images, and m_t is a corresponding one of said original contrast thresholds.

34. (Original) The method of claim 21 wherein said rendering manager performs said compression procedure upon said original perceived contrast images to thereby keep small pixel amplitudes relatively constant, and to thereby reduce large pixel amplitudes.

35. (Currently Amended) The method of claim 21 wherein said rendering manager calculates display contrast thresholds, m_t, corresponding to an intended display device, for individual pixels corresponding to said original subbands according to an equation 3.3:

$$m_t = \frac{k}{M_{opt}(u)}\sqrt{\frac{2}{T}\left(\frac{1}{X_O^2}+\frac{1}{X_{MAX}^2}+\frac{u^2}{N_{MAX}^2}\right)\left(\frac{1}{\eta pE}+\frac{\phi_0}{1-e^{-\left(\frac{u}{u_0}\right)^2}}\right)} \qquad \textbf{(3.3)}$$

where u is a spatial frequency value for a pixel and surrounding pixels, X_O is an object size for a displayed scene expressed in angular degrees for a human eye, N_{max} is a maximum number of cycles that said human eye can integrate, X_{max} is a maximum object size that said human eye can integrate, [[n]] $\underline{\eta}$ is a quantum efficiency of cones in said human eye, p is a photon conversion factor for converting light units, E is a retinal illuminance value for said displayed scene, ϕ_O is a spectral density of neural noise, u_O is a lateral inhibition frequency limit, k is a signal-to-noise ratio of said displayed scene, $M_{opt}(u)$ is an optical modulation transfer function, and T is an integration time of said human eye.

36. (Original) The method of claim 35 wherein said rendering manager generates compressed contrast images, M_p, corresponding to said compressed perceived contrast images, C_p, by calculating individual pixel values according to a permutation of an equation 3.6:

$$C_p = \sqrt{\frac{M_p}{m_t}} \tag{3.6}$$

where C_p is a pixel value from one of said compressed perceived contrast images, and m_t is a corresponding one of said display contrast thresholds.

37. (Original) The method of claim 36 wherein said rendering manager generates compressed subband images corresponding to said compressed contrast values, M_p, by calculating individual pixel values L_p according to a permutation of an equation 3.1:

$$M_p = \frac{L_p - L_A}{|L_A| + s} \tag{3.1}$$

where M_p is a contrast value at a location p in one of said compressed contrast images, L_A is a luminance average around said location p, and s is a saturation term to avoid divisions by zero.

38. (Original) The method of claim 37 wherein said rendering manager linearly rescales a lowest-frequency subband image from said original subband images such that a mean luminance value from said lowest-frequency subband image is equal to a mean output luminance of said intended display device.

39. (Original) The method of claim 38 wherein said rendering manager performs said subband combination procedure by initially adding a next-to-lowest compressed subband image to said lowest-frequency subband image to produce a current combined subband image, said rendering manager then continuing said subband combination procedure by sequentially adding each remaining one of said compressed subband images to said current combined subband image in an order of ascending subband frequencies to finally produce said rendered luminance image.

40. (Currently Amended) The method of claim 39 wherein said rendering manager combines said rendered luminance image with corresponding chrominance information to produce composite rendered image data for use by a system user.

41. (Original) A computer-readable medium comprising program instructions for performing a image rendering procedure by performing the steps of:

dividing an original luminance image into a plurality of original subband images by utilizing a rendering manager;

converting said original subband images into original perceived contrast images with said rendering manager;

performing a compression procedure upon said original perceived contrast images to produce compressed perceived contrast images;

converting said compressed perceived contrast images into compressed subband images with said rendering manager; and

combining said compressed subband images together during a subband combination procedure to generate a rendered luminance image.

42. (Original) A system for performing an image rendering procedure, comprising:

means for dividing an original luminance image into a plurality of original subband images;

means for converting said original subband images into original perceived contrast images;

means for performing a compression procedure upon said original perceived contrast images to produce compressed perceived contrast images;

means for converting said compressed perceived contrast images into compressed subband images; and

means for combining said compressed subband images together during a subband combination procedure to generate a rendered luminance image.

43. (Cancelled).